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Patent Application for:

QUOTE AND INFORMATION SYSTEM

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QUOTE AND INFORMATION SYSTEM

FIELD OF THE INVENTION

This invention relates generally to the field of television set-top boxes. More particularly, this invention relates to a method and apparatus for a set-top box used as a quote and information system for the home.

BACKGROUND OF THE INVENTION

Television set-top boxes were initially introduced to provide tuning capabilities for cable and satellite television systems. While these devices still provide that fundamental function, digital set-top boxes now often incorporate powerful computers in the latest generation of set-top boxes. With such computers available, it is now possible to expand the usefulness of the television set-top box beyond that of merely providing tuning functions for cable and satellite systems.

SUMMARY OF THE INVENTION

The present invention relates generally to a system and method for providing a quote and information system for the home using a set-top box communicating with a service provider. Objects, advantages and features of the invention will become apparent to those skilled in the art upon consideration of the following detailed description of the invention.

1 In one embodiment of the present invention a quote and information system
2 for use within the home is provided in which a subscriber utilizes a set-top box as
3 a vehicle for navigating a menu system to solicit quotes from vendors using a
4 service provider (MSO - Multiple Service Operator) as an intermediary. Requests
5 for quotes are anonymously forwarded to appropriate vendors and quotes returned
6 to the subscriber. In other embodiments, the system can further be used to obtain
7 hierarchical categorized information or to register products in order to receive offers
8 from local vendors relating to those products.

9 In accord with one embodiment consistent with the present invention, a
10 television set-top box includes a tuner for receiving signals representing television
11 programming and delivering the signals representing television programming to a
12 display interface. A bar code reader is operatively coupled to a central processor,
13 to receive data from a swipe card passed through the swipe card reader. A
14 program running on the central processor receives the bar code information from
15 the bar code reader.

16 A method of obtaining quotes consistent with the present invention includes:
17 at a set-top box, submitting a request for quote (RFQ) to a service provider; at the
18 service provider, resubmitting the RFQ to a plurality of vendors; at the service
19 provider, receiving a plurality of quotes from vendors; and at the service provider,
20 forwarding the quotes to the set-top box for communication to a subscriber.

21 A method of registering a product consistent with embodiments of the
22 present invention includes: at a set-top box, submitting product registration data to
23 a service provider; at the service provider, entering the product registration data into
24 a database; at the service provider, matching the product registration data to a
25 plurality of vendor registrations submitted by a plurality of vendors; at the service
26 provider, sending the product registration data to a plurality of matching vendors;
27 at the service provider, receiving a plurality of submissions from the plurality of
28 matching vendors; and forwarding the submissions to the set-top box for
29 communication to a subscriber.

1 A method of obtaining information consistent with embodiments of the
2 present invention includes: at a set-top box, submitting a request for information to
3 a service provider; at the service provider, receiving the request for information and
4 matching the request for information with a plurality of vendor submissions; at the
5 service provider, sending the plurality of vendor submissions to the set-top box for
6 communication to a subscriber.

7 A television set-top box consistent with embodiments of the invention
8 includes a tuner for receiving signals representing television programming and
9 delivering the signals representing television programming to a display interface.
10 A central processor is provided and a product identification reader is operatively
11 coupled to the central processor to read a product identifier. A program running on
12 the central processor receives information from the product identification reader.

13 The above summaries are intended to illustrate exemplary embodiments of
14 the invention, which will be best understood in conjunction with the detailed
15 description to follow, and are not intended to limit the scope of the appended
16 claims.

17 BRIEF DESCRIPTION OF THE DRAWINGS

18 The features of the invention believed to be novel are set forth with
19 particularity in the appended claims. The invention itself however, both as to
20 organization and method of operation, together with objects and advantages
21 thereof, may be best understood by reference to the following detailed description
22 of the invention, which describes certain exemplary embodiments of the invention,
23 taken in conjunction with the accompanying drawings in which:

24 **FIGURE 1** is a system block diagram of a system using a set-top box.

25 **FIGURE 2** is a functional block diagram of a digital set-top box suitable for
26 use with the present invention.

27 **FIGURE 3**, made up of **FIGURE 3A**, **3B** and **3C**, is a first illustration of an
28 exemplary menu system consistent with an embodiment of the invention.

1 **FIGURE 4** is a message flow diagram describing a process consistent with
2 the menu system illustrated in **FIGURE 3**.

3 **FIGURE 5** is a flow chart depicting an embodiment of the present invention
4 consistent with that of **FIGURE 3** and **FIGURE 4**.

5 **FIGURE 6** is a second illustration of an exemplary menu system consistent
6 with an embodiment of the invention.

7 **FIGURE 7** is a message flow diagram describing a process consistent with
8 the menu system illustrated in **FIGURE 6**.

9 **FIGURE 8** is a flow chart depicting an embodiment of the present invention
10 consistent with that of **FIGURE 6** and **FIGURE 7**.

11 **FIGURE 9** is a third illustration of an exemplary menu system consistent with
12 an embodiment of the invention.

13 **FIGURE 10** is a message flow diagram describing a process consistent with
14 the menu system illustrated in **FIGURE 9**.

15 **FIGURE 11** is a flow chart depicting an embodiment of the present invention
16 consistent with that of **FIGURE 9** and **FIGURE 10**.

17
18 **DETAILED DESCRIPTION OF THE INVENTION**

19 While this invention is susceptible of embodiment in many different forms,
20 there is shown in the drawings and will herein be described in detail specific
21 embodiments, with the understanding that the present disclosure is to be
22 considered as an example of the principles of the invention and not intended to limit
23 the invention to the specific embodiments shown and described. In the description
24 below, like reference numerals are used to describe the same, similar or
25 corresponding parts in the several views of the drawings.

26 Referring to **FIGURE 1**, a block diagram for an exemplary interactive cable
27 or satellite television (TV) system 100 is shown. The system 100 includes, at a
28 head end of the service provider 10, a media server 12 for providing, on demand,
29 movies and other programming obtained from a media database 14. The media

1 server 12 might also provide additional content such as interviews with the actors,
2 games, advertisements, available merchandise, associated Web pages, interactive
3 games and other related content. The system 100 also includes an electronic
4 programming guide (EPG) server 16 and a program listing database 18 for
5 generating an EPG. Set-top box 22 can generally provide for bidirectional
6 communication over a transmission medium 20 in the case of a cable STB 22. In
7 other embodiments, bidirectional communication can be effected using
8 asymmetrical communication techniques possibly using dual communication
9 media -- one for the uplink and one for the downlink. In any event, the STB 22 can
10 have its own Universal Resource Locator (URL) or IP address or other unique
11 identifier assigned thereto to provide for addressability by the head end and users
12 of the Internet.

13 The media server 12 and EPG server 16 are operatively coupled by
14 transmission medium 20 to a set-top box (STB) 22. The transmission medium 20
15 may include, for example, a conventional coaxial cable network, a fiber optic cable
16 network, telephone system, twisted pair, a satellite communication system, a radio
17 frequency (RF) system, a microwave system, other wireless systems, a
18 combination of wired and wireless systems or any of a variety of known electronic
19 transmission mediums. In the case of a cable television network, transmission
20 medium 20 is commonly realized at the subscriber's premises as a coaxial cable
21 that is connected to a suitable cable connector at the rear panel of the STB 22. In
22 the case of a Direct Satellite System (DSS), the STB 22 is often referred to as an
23 Integrated Receiver Decoder (IRD). In the case of a DSS system, the transmission
24 medium is a satellite transmission at an appropriate microwave band. Such
25 transmissions are typically received by a satellite dish antenna with an integral Low
26 Noise Block (LNB) that serves as a down-converter to convert the signal to a lower
27 frequency for processing by the STB 22.

28 The exemplary system 100 further includes a TV 24, such as a digital
29 television, having a display 26 for displaying programming, an EPG, etc. The STB
30 22 may be coupled to the TV 24 and various other audio/visual devices 26 (such as

1 audio systems, Personal Video Recorders (PVRs), Video Tape Recorders (VTRs),
2 Video Cassette Recorders (VCRs) and the like), storage devices (e.g., hard disc
3 drives) and Internet Appliances 28 (such as email devices, home appliances,
4 storage devices, network devices, and other Internet Enabled Appliances) by an
5 appropriate interface 30, which can be any suitable analog or digital interface. In
6 one embodiment, interface 30 conforms to an interface standard such as the
7 Institute of Electrical and Electronics Engineers (IEEE) 1394 standard, but could
8 also be wholly or partially supported by a DVI interface (Digital Visual Interface -
9 Digital Display Working Group, www.ddwg.org) or other suitable interface.

10 The STB 22 may include a central processing unit (CPU) such as a
11 microprocessor and memory such as Random Access Memory (RAM), Read Only
12 Memory (ROM), flash memory, mass storage such as a hard disc drive, floppy disc
13 drive, optical disc drive or may accommodate other electronic storage media, etc.
14 Such memory and storage media is suitable for storing data as well as instructions
15 for programmed processes for execution on the CPU, as will be discussed later.
16 Information and programs stored on the electronic storage media or memory may
17 also be transported over any suitable transmission medium such as that illustrated
18 as 20. STB 22 may include circuitry suitable for audio decoding and processing,
19 the decoding of video data compressed in accordance with a compression
20 standard such as the Motion Pictures Experts Group (MPEG) standard and other
21 processing to form a controller or central hub. Alternatively, components of the
22 STB 22 may be incorporated into the TV 24 itself, thus eliminating the STB 22.
23 Further, a computer having a tuner device and modem may be equivalently
24 substituted for the TV 24 and STB 22.

25 By way of example, the STB 22 may be coupled to devices such as a
26 personal computer, video cassette recorder, camcorder, digital camera, personal
27 digital assistant and other audio/visual or Internet related devices. In addition, a
28 data transport architecture, such as that set forth by an industry group which
29 includes Sony Corporation and known as the Home Audio-Video Interoperability
30 (HAVi) architecture may be utilized to enable interoperability among devices on a

1 network regardless of the manufacturer of the device. This forms a home network
2 system wherein electronic devices and Internet appliances are compatible with
3 each other. The STB 22 runs an operating system suitable for a home network
4 system such as Sony Corporation's Aperios™ real time operating system. Other
5 operating systems could also be used.

6 The STB 22 includes an infrared (IR) receiver 34 for receiving IR signals from
7 an input device such as remote control 36. Alternatively, it is noted that many other
8 control communication methods may be utilized besides IR, such as wired or
9 wireless radio frequency, etc. In addition, it can be readily appreciated that the
10 input device 36 may be any device suitable for controlling the STB 22 such as a
11 remote control, personal digital assistant, laptop computer, keyboard or computer
12 mouse. In addition, an input device in the form of a control panel located on the TV
13 24 or the STB 22 can be provided.

14 The STB 22 may also be coupled to an independent service provider (ISP)
15 host 38 by a suitable connection including dial-up connections, DSL (Digital
16 Subscriber Line) or the same transmission medium 20 described above (e.g., using
17 a cable modem) to, thus, provide access to services and content from the ISP and
18 the Internet. The ISP host 38 provides various content to the user that is obtained
19 from a content database 42. STB 22 may also be used as an Internet access
20 device to obtain information and content from remote servers such as remote
21 server 48 via the Internet 44 using host 38 operating as an Internet portal, for
22 example. In certain satellite STB environments, the data can be downloaded at
23 very high speed from a satellite link, with asymmetrical upload speed from the set-
24 top box provided via a dial-up or DSL connection.

25 While the arrangement illustrated in **FIGURE 1** shows a plurality of servers
26 and databases depicted as independent devices, any one or more of the servers
27 can operate as server software residing on a single computer. Moreover, although
28 not explicitly illustrated, the servers may operate in a coordinated manner under
29 centralized or distributed control to provide multiple services as a Multiple Service
30 Operator (MSO) in a known manner. Additionally, the services provided by the

1 servers shown in **FIGURE 1** may actually reside in other locations, but from the
2 perspective of the user of STB 22, the service provider 10 serves as a portal to the
3 services shown. Those skilled in the art will appreciate that the illustration of
4 **FIGURE 1** represents a simplified depiction of a cable system configuration shown
5 simply as service provider 10. The actual configuration of the service provider's
6 equipment is more likely to follow a configuration defined by the CableLabs
7 OpenCable™ specification. The simplified illustration shown is intended to simplify
8 the discussion of the service provider 10's operation without unnecessarily
9 burdening the discussion with architectural details that will be evident to those
10 skilled in the art. Those details can be found in the publicly available CableLabs
11 OpenCable™ specification or in the text "OpenCable Architecture (Fundamentals)"
12 by Michael Adams, Cisco Press, Nov. 1999.

13 Referring now to **FIGURE 2**, a typical system configuration for a digital set-
14 top box 22 is illustrated. In this exemplary set-top box, the transmission medium
15 20, such as a coaxial cable, is coupled by a suitable interface through a diplexer
16 102 to a tuner 104. Tuner 104 may, for example, include a broadcast in-band tuner
17 for receiving content, an out-of-band (OOB) tuner for receiving data transmissions.
18 A return path through diplexer 102 provides an OOB return path for outbound data
19 (destined for example for the head end). A separate tuner (not shown) may be
20 provided to receive conventional RF broadcast television channels. Modulated
21 information formatted, for example, as MPEG-2 information is then demodulated
22 at a demodulator 106. The demodulated information at the output of demodulator
23 106 is provided to a demultiplexer and descrambler circuit 110 where the
24 information is separated into discrete channels of programming. The programming
25 is divided into packets, each packet bearing an identifier called a Packet ID (PID)
26 that identifies the packet as containing a particular type of data (e.g., audio, video,
27 data). The demodulator and descrambler circuit 110 also decrypts encrypted
28 information in accordance with a decryption algorithm to prevent unauthorized
29 access to programming content, for example.

1 Audio packets from the demultiplexer 110 (those identified with an audio
2 PID) are decrypted and forwarded to an audio decoder 114 where they may be
3 converted to analog audio to drive a speaker system (e.g., stereo or home theater
4 multiple channel audio systems) or other audio system 116 (e.g., stereo or home
5 theater multiple channel amplifier and speaker systems) or may simply provide
6 decoded audio out at 118. Video packets from the demultiplexer 110 (those identified with
7 a video PID) are decrypted and forwarded to a video decoder 122.
8 In a similar manner, data packets from the demultiplexer 110 (those identified with
9 a data PID) are decrypted and forwarded to a data decoder 126.

10 Decoded data packets from data decoder 126 are sent to the set-top box's
11 computer system via the system bus 130. A central processing unit (CPU) 132 can
12 thus access the decoded data from data decoder 126 via the system bus 130.
13 Video data decoded by video decoder 122 is passed to a graphics processor 136,
14 which is a computer optimized to processes graphics information rapidly. Graphics
15 processor 136 is particularly useful in processing graphics intensive data
16 associated with Internet browsing, gaming and multimedia applications such as
17 those associated with MHEG (Multimedia and Hypermedia information coding
18 Experts Group) set-top box applications. It should be noted, however, that the
19 function of graphics processor 136 may be unnecessary in some set-top box
20 designs having lower capabilities, and the function of the graphics processor 136
21 may be handled by the CPU 132 in some applications where the decoded video is
22 passed directly from the demultiplexer 110 to a video encoder. Graphics processor
23 136 is also coupled to the system bus 130 and operates under the control of CPU
24 132.

25 Many set-top boxes such as STB 22 may incorporate a smart card reader
26 140 for communicating with a so called "smart card," often serving as a Conditional
27 Access Module (CAM). The CAM typically includes a central processor unit (CPU)
28 of its own along with associated RAM and ROM memory. Smart card reader 140
29 is used to couple the system bus of STB 22 to the smart card serving as a CAM
30 (not shown). Such smart card based CAMs are conventionally utilized for

1 authentication of the user and authentication of transactions carried out by the user
2 as well as authorization of services and storage of authorized cryptography keys.
3 For example, the CAM can be used to provide the key for decoding incoming
4 cryptographic data for content that the CAM determines the user is authorized to
5 receive.

6 STB 22 can operate in a bidirectional communication mode so that data and
7 other information can be transmitted not only from the system's head end to the
8 end user, or from a service provider to the end user of the STB 22, but also, from
9 the end user upstream using an out-of-band channel. In one embodiment, such
10 data passes through the system bus 130 to a modulator 144 through the diplexer
11 102 and out through the transmission medium 20. This capability is used to
12 provide a mechanism for the STB 22 and/or its user to send information to the head
13 end (e.g., service requests or changes, registration information, etc.) as well as to
14 provide fast outbound communication with the Internet or other services provided
15 at the head end to the end user.

16 Set-top box 22 may include any of a plurality of I/O (Input/Output) interfaces
17 represented by I/O interfaces 146 that permit interconnection of I/O devices to the
18 set-top box 22. By way of example, and not limitation, a serial RS-232 port 150 can
19 be provided to enable interconnection to any suitable serial device supported by the
20 STB 22's internal software. Similarly, communication with appropriately compatible
21 devices can be provided via an Ethernet port 152, a USB (Universal Serial Bus) port
22 154, an IEEE 1394 (so-called firewire™ or i-link™) or IEEE 1394 wide port 156, S-
23 video port 158 or infrared port 160. Such interfaces can be utilized to interconnect
24 the STB 22 with any of a variety of accessory devices such as storage devices,
25 audio / visual devices 26, gaming devices (not shown), Internet Appliances 28, etc.

26 I/O interfaces 146 can include a modem (be it dial-up, cable, DSL or other
27 technology modem) having a modem port 162 to facilitate high speed or alternative
28 access to the Internet or other data communication functions. In one preferred
29 embodiment, modem port 162 is that of a DOCSIS (Data Over Cable System
30 Interface Specification) cable modem to facilitate high speed network access over

1 a cable system, and port 162 is appropriately coupled to the transmission medium
2 embodied as a coaxial cable. Thus, the STB 22 can carry out bidirectional
3 communication via the DOCSIS cable modem with the STB 22 being identified by
4 a unique IP address. The DOCSIS specification is publically available.

5 A PS/2 or other keyboard / mouse / joystick interface such as 164 can be
6 provided to permit ease of data entry to the STB 22. Such inputs provide the user
7 with the ability to easily enter data and/or navigate using pointing devices. Pointing
8 devices such as a mouse or joystick may be used in gaming applications.

9 Of course, STB 22 also may incorporate basic video outputs 166 that can be
10 used for direct connection to a television set such as 24 instead of (or in addition
11 to) an IEEE 1394 connection such as that illustrated as 30. In one embodiment,
12 Video output 166 can provide composite video formatted as NTSC (National
13 Television System Committee) video. In some embodiments, the video output 166
14 can be provided by a direct connection to the graphics processor 136 or the
15 demultiplexer / descrambler 110 rather than passing through the system bus 130
16 as illustrated in the exemplary block diagram. S-Video signals from output 158 can
17 be similarly provided without passing through the system bus 130 if desired in other
18 embodiments.

19 The infrared port 160 can be embodied as an infrared receiver 34 as
20 illustrated in **FIGURE 1**, to receive commands from an infrared remote control 36,
21 infrared keyboard or other infrared control device. Although not explicitly shown,
22 front panel controls may be used in some embodiments to directly control the
23 operation of the STB 22 through a front panel control interface as one of interfaces
24 146. Selected interfaces such as those described above and others can be
25 provided in STB 22 in various combinations as required or desired.

26 STB 22 will more commonly, as time goes on, include a disc drive interface
27 170 and disc drive mass storage 172 for user storage of content and data as well
28 as providing storage of programs operating on CPU 132. STB 22 may also include
29 floppy disc drives, CD ROM drives, CD R/W drives, DVD drives, etc. CPU 132, in
30 order to operate as a computer, is coupled through the system bus 130 (or through

1 a multiple bus architecture) to memory 176. Memory 178 may include a
2 combination any suitable memory technology including Random Access Memory
3 (RAM), Read Only Memory (ROM), Flash memory, Electrically Erasable
4 Programmable Read Only Memory (EEPROM), etc.

5 While the above exemplary system including STB 22 is illustrative of the
6 basic components of a digital set-top box suitable for use with the present
7 invention, the architecture shown should not be considered limiting since many
8 variations of the hardware configuration are possible without departing from the
9 present invention. The present invention could, for example, also be implemented
10 in more advanced architectures such as that disclosed in U.S. Patent Application
11 Serial No. 09/473,625, filed Dec. 29, 1999, Docket No. SONY-50N3508 entitled
12 "Improved Internet Set-Top Box Having and In-Band Tuner and Cable Modem" to
13 Jun Maruo and Atsushi Kagami. This application describes a set-top box using a
14 multiple bus architecture with a high level of encryption between components for
15 added security. This application is hereby incorporated by reference as though
16 disclosed fully herein.

17 In general, during operation of the STB 22, an appropriate operating
18 system 180 such as, for example, Sony Corporation's Aperios™ real time operating
19 system is loaded into, or is permanently stored in, active memory along with the
20 appropriate drivers for communication with the various interfaces. In other
21 embodiments, other operating systems such as Microsoft Corporation's Windows
22 CE™ could be used without departing from the present invention. Along with the
23 operating system and associated drivers, the STB 22 usually operates using
24 browser software 182 in active memory or may permanently reside in ROM,
25 EEPROM or Flash memory, for example. The browser software 182 typically
26 operates as the mechanism for viewing not only web pages on the Internet, but
27 also serves as the mechanism for viewing an Electronic Program Guide (EPG)
28 formatted as an HTML document. The browser 182 can also provide the
29 mechanism for viewing normal programming (wherein normal programming is
30 viewed as an HTML video window - often occupying the entire area of screen 26).

1 STB software architectures vary depending upon the operating system.
2 However, in general, all such architectures generally include, at the lowest layer,
3 various hardware interface layers. Next is an operating system layer as previously
4 described. The software architectures of modern STB have generally evolved to
5 include a next layer referred to as "middleware." Such middleware permits
6 applications to run on multiple platforms with little regard for the actual operating
7 system in place. Middleware standards are still evolving at this writing, but are
8 commonly based upon Javascript and HTML (hypertext Markup Language) virtual
9 machines. At the top layer is the application layer where user applications and the
10 like reside (e.g., browsing, email, EPG, Video On Demand (VOD), rich multimedia
11 applications, pay per view, etc.). The current invention can be utilized with any
12 suitable set-top box software and hardware architecture.

13 With the enhanced intelligence of digital set-top boxes such as that depicted
14 in **FIGURE 2**, the set-top box in cooperation with service provider 10 operating as
15 a Multi-Service Operator (MSO) can be used as a home management tool to
16 secure price quotes for products and services and obtain desired relevant
17 information. This can be done advantageously through the service provider 10
18 since the service provider 10 is able to obtain substantial knowledge about the
19 subscriber to help isolate needed information, products and services. For example,
20 since the service provider operates in a relatively small geographic region, it can
21 readily associate the subscriber with vendors within the subscribers area that can
22 submit quotes to provide products and services needed by the subscriber. In this
23 manner, the user can use the STB as a communication tool to have local vendors
24 bid on services and products desired by the subscriber. (The terms "bid" and
25 "quote" as used herein are as commonly defined in the dictionary to refer to a
26 vendor proposing a price to supply goods and services.) In accordance with certain
27 embodiments of the present invention, a bar code reader 196, or other product
28 identification reader, is used to read product identifiers such as bar codes from
29 products in order to register those products with venders and service providers.

1 With reference back to **FIGURE 1**, in order to facilitate use of the set-top box
2 22 as a home management tool, the service provider 10 may include a
3 quote/advertisement server 84 with an associated quote/advertisement database
4 88. This database functions to contain data regarding vendors within a particular
5 geographic area and their capabilities to provide services to subscribers. For
6 example, the database can categorize services or products provided according to
7 categories in a manner similar to those used in the Yellow Pages™, enabling the
8 subscriber to search for services using such categories and enabling the service
9 provider 10 to solicit quotes on behalf of the subscriber to an appropriate category
10 of service provider.

11 In one embodiment of the present invention, the subscriber can utilize a
12 menu system called up from his or her set-top box 22 and displayed on display 26
13 to seek out services using a hierarchical menu system. With reference to **FIGURE**
14 **3A**, viewed in conjunction with **FIGURE 3B** and **FIGURE 3C** (i.e., **FIGURE 3**), an
15 exemplary menu system permitting the user to obtain varying services is illustrated.
16 A main menu 310 includes a plurality of selections of broad categories of services
17 provided by service provider 10. In the example illustrated, various repairs,
18 services, improvements and purchases are available to the user. In the example
19 illustrated the user might select home repair menu selection 314 in order to obtain
20 home repair services. This could be accomplished, of course, by use of remote
21 controller 36 navigating through the menu, highlighting appropriate selections and
22 then making the selections by pressing an enter button (on a screen or on remote
23 controller 36) in a more or less conventional manner of navigating menus using a
24 remote controller. In other embodiments, a keyboard and mouse or other input
25 devices could also be used.

26 Upon entering the selection, the user is taken to a home repair menu 320
27 which divides the type of repair into a number of general categories such as
28 appliance repair, roof repair, carpentry, plumbing, etc. In this instance the user may
29 select the plumbing selection 324 in order to obtain a plumbing related repair. At

1 this point, the user is passed to a plumbing menu 330 that breaks plumbing repairs
2 into a number of categories including various broken components, clogs, etc. In
3 addition, at this point, the user could elect to simply see a list of plumbers
4 registered with the service provider 10 by making an appropriate selection. This
5 process will be illustrated in greater detail later.

6 In the example shown in **FIGURE 3**, the subscriber selects broken faucet
7 menu item 336 which leads to a data entry form 340 that permits the user to
8 provide various details about the service needed. In this case, the subscriber is
9 able to indicate when the repair is needed by entering information in a data entry
10 form block 342, provide details of the type of device needing repair at 344 and
11 describing in freeform the details of the repair needed at 346. This, of course, can
12 be implemented using HTML pages in a known manner. When the user completes
13 entry of information into form 340, the form is submitted by selection of submit
14 button 348.

15 Upon submission of details to the service provider 10, the service provider
16 assigns a quote identifier (in this case RFQ #379556) and assembles the data
17 submitted by the subscriber into a quote request message 350 (Request For Quote,
18 RFQ) that can be sent via E-mail through the Internet or through the service
19 providers own system to vendors which have appropriately registered with the
20 service provider. In this case, vendors who have registered with the service
21 provider 10 as "plumbers" would receive RFQ's relating to plumbing from the
22 service provider.

23 Message 350 includes the details provided by the subscriber, but in the
24 preferred embodiment it does not identify the subscriber. In this embodiment the
25 subscriber is only identified by the RFQ number. Thus, the vendor has no idea who
26 is requesting the work and must submit a quote (i.e., bid on the job) based solely
27 on the information provided by the subscriber and with the knowledge that other
28 plumbers will be bidding on the same RFQ. To do so, the quote request may be
29 implemented as an HTML page also permitting the vendor to fill in a quote at one
30 or more form entry blocks 354 and submit the quote by selecting the submit quote

1 button 356. Or, the vendor may elect not to bid on the job in which case the
2 message can either be disregarded or the no quote button 358 can be selected.

3 When the vendor elects to submit a quote, the quote is retained for an
4 appropriate period of time and then assembled with other quotes for a particular
5 job. It is then transmitted back to the subscriber, for example, as message 360
6 which, again, can be transmitted by E-mail, retrieved by the subscriber using set-
7 top box 22 and displayed on display 26. In an alternate embodiment, each
8 individual quote can be sent to the subscriber as it is received. In the present
9 example, three quotes have been forwarded to the subscriber and those are
10 represented by selections 362, 364 and 366. By selecting any of the selections
11 362, 364 or 366, the user can accept one of the quotes or, alternatively, the user
12 can reject all quotes by pressing selection 368. In the example illustrated, when
13 a selection is made of quote 362, a message is transmitted back to the service
14 provider from set-top box 22 so that service provider 10 knows that subscriber has
15 accepted a quote. Service provider 10 then notifies the vendor with a message
16 such as 370 so that the vendor knows his quote has been accepted. At this point,
17 the service provider 10 can identify the customer to the vendor as illustrated in 374
18 so that the vendor can proceed with directly contacting the subscriber to arrange
19 the service. In a similar manner, a message 380 is transmitted to the subscriber
20 to inform the subscriber of whose quote was accepted. This information is
21 provided in area 384 so that the subscriber knows who to contact to arrange for
22 service.

23 In an alternative embodiment, the subscriber can be provided with
24 information about who is quoting on the job along with the quote so that the
25 message 380 may be redundant or unnecessary. In accordance with the process
26 just described in conjunction with an exemplary menu system, several business
27 models can be devised for the service provider 10 to capitalize on this system. In
28 one embodiment, a subscription fee can be charged to the subscriber to permit the
29 subscriber to use the quote service. In another business model, the subscriber can
30 be charged a fee for each use of the quote system. In another model, a

1 subscription fee can be charged to vendors who wish to receive requests for
2 quotes. In yet another model, vendors can be charged on a per use basis to
3 receive the requests for quotes. In yet another business model, a fee can be
4 charged to the vendor who actually receives acceptance of his quote. In yet
5 another business model, a subscriber can be charged a fee whenever a quote
6 submitted by the system is accepted. Also, various combinations of the above
7 business models can be implemented to facilitate a profitable enterprise.

8 **FIGURE 4** illustrates a message flow diagram 400 for the process just
9 described. At 402 an RFQ is submitted to the service provider 10 (MSO). The
10 service provider 10 in turn forwards the RFQ at 404 and 408 to the two vendors
11 illustrated. Although illustrated as two messages, it could well be a single
12 broadcast message broadcast to a number of addresses. Vendors 1 and 2, may
13 then, if they desire, submit a quote back to the service provider 10 illustrated as 412
14 and 414. Those quotes are in turn relayed to the service provider as quotes 416
15 and 418 to the subscriber. If the subscriber accepts a quote at 422 vendor 1 and
16 vendor 2 are notified at 424 and 428 and the subscriber is notified at 432 of the
17 identity of the winning vendor. In the example illustrated, vendor 1 is awarded the
18 job and therefor notification message 428 includes the identity of the subscriber
19 making the request for quote. Message 424 to vendor 2, however, only indicates
20 to vendor 2 that he has not been awarded the job. Once the subscriber and vendor
21 1 are identified to one another, direct communication between the two can ensue
22 at 436 to facilitate making arrangements for the service.

23 This process is further illustrated by the flow chart of **FIGURE 5** as process
24 500. The process starts at 502 after which the subscriber navigates through a
25 menu system to create the request for quote at 504. At 508 the request for quote
26 is submitted to the service provider. At 512, the service provider submits the RFQ
27 to appropriate vendors that match the criteria established by the subscriber while
28 navigating the menu system. At 516 vendors respond with quotes to the service
29 provider and at 520 the service provider forwards the quotes to the subscriber. The

1 subscriber can accept a quote at 524 and the vendors are notified of having been
2 accepted or rejected at 530. In addition, the accepted vendor and subscriber are
3 identified to each other.

4 As previously described, the subscriber may already know the identity of the
5 vendor he has selected. The subscriber and vendor can then make arrangements
6 for the service. At 534 (which may appear at other times in the sequence) an
7 appropriate charge can be made to the appropriate party or parties in accordance
8 with the business model used to establish the quote system of the present
9 invention. The process ends at 538. Those skilled in the art will understand that
10 many variations are possible within the bounds of the present invention. The menu
11 system used to generate the quote can be more or less hierarchical than described
12 and may provide other paths for the user to take without departing from the present
13 invention. Moreover, the flow chart of **FIGURE 5** illustrates the basic process but
14 many additional details will be added to implement the process but which are not
15 shown in detail herein in order to avoid obscuring the invention.

16 In accordance with another embodiment of the present invention, the menu
17 system can be utilized to register purchases (or register products already owned)
18 with local vendors who may wish to provide special discounts, services or
19 information. In this example, again, main menu 310 is called up by the user using
20 remote controller 36 or any other suitable mechanism. In this case, the subscriber
21 selects menu selection 614 in order to register a purchase. This selection takes
22 the user to menu 620 where the type of purchase can be categorized into a number
23 of categories -- for example, appliances, automobiles, musical instruments and the
24 like. In addition, by registering various products, the user can obtain advice for
25 using those products. An example of this would be to enter a plurality of grocery
26 items and request help in planning a menu around the grocery items at hand.

27 In the example of **FIGURE 6**, the subscriber selects musical instruments 624
28 from menu 620, which takes the user to a registration form 630 in which the user
29 is permitted to describe the item purchased in a data entry form box 636, or may

1 scan a bar code (or other product identifier) associated with the product using bar
2 code reader (or other product identification reader) 196. The user then submits the
3 registration form using button 638. Upon submitting the registration form, the form
4 is transmitted to the service provider 10 who queries a database stored in database
5 88 for advertisers that wish to communicate with owners of this category of product.
6 As a result of the purchase, various vendors (in the case probably music stores)
7 can be notified using message 640 of the purchase and the vendor can be provided
8 with an alias E-mail address shown as 646 in which to direct advertisements or
9 special offers. By providing the user with an alias, the users identity can be
10 disguised from vendors so that the user in cooperation with the service provider 10
11 can control receipt of offers that are not desired.

12 A vendor receiving the notice 640 may thus generate offers such as that
13 shown as 650 that can be mailed to the alias E-mail address 646 offering special
14 discounts, information or other communications. When the user receives the
15 message, it can be formatted as an HTML page with the user given button 654 and
16 658 to permit the user to block future ads from this particular vendor or delete the
17 registration altogether respectively if desired. In this manner, the user can control
18 the receipt of junk mail or the source of junk mail which he does not wish to
19 receive. In other embodiments, a user's actual email address can be used without
20 the anonymity features of the above embodiment.

21 Again, several business models present themselves for this service. In one
22 such model, the vendor can be charged for submitting vendor registrations to match
23 with user registrations. In another business model a fee can be charged to the
24 vendors for forwarding their submissions. In yet another model, a subscriber can
25 be charged a fee for submitting product registration data. In yet another model, a
26 subscription fee can be charged to the subscriber to allow submission of multiple
27 product registrations. Of course, combinations of the above models can be utilized
28 to formulate additional business models.

29 **FIGURE 7** shows a message flow diagram corresponding with an example
30 of the product registration embodiment just described. In this example, a

1 registration message is sent from the subscriber to the service provider at 704.
2 That registration is in turn forwarded to vendor 1 and vendor 2 as registration 708
3 and 712. Vendor 1 and vendor 2 can then make offers, offer 1 and offer 2, by
4 messages 716 and 718 directed to the alias through the service provider 10. Those
5 offers are then forwarded as messages 720 and 724 to the subscriber.

6 In the event the subscriber wishes to block future messages or delete future
7 messages, those elections are represented by messages 730 and 736 respectively.
8 Any communication between the subscriber and vendor can be initiated if desired
9 by the subscriber at 740. However, since the vendor only knows the subscriber by
10 alias, any contact with the subscriber is subject to filtering by the service provider
11 10.

12 The flow chart 800 of **FIGURE 8** describes the product registration process
13 starting at 802. At 804 the subscriber navigates a menu system to register the
14 product, possibly using bar code reader 196 to simplify entry of information about
15 the product (or bypassing most of the menu system entirely). The registration is
16 then submitted to the service provider at 808. Product information is then
17 submitted to subscribing vendors with an alias used to represent the subscriber at
18 812. The vendor can then send offers to the subscriber through the service provider
19 using the alias at 816. The service provider forwards offers to the subscriber
20 subject to any filtering required by the subscriber at 820. If the subscriber chooses
21 to block a vendor at 824, then the service provider filters future mail from that
22 vendor at 830. The vendor then is able to continue sending offers periodically as
23 it sees appropriate until the registration is deleted at 834 or the vendor is blocked
24 at 824. If the registration is deleted at 834, the service provider removes the alias
25 from his database at 838 and may notify the vendors accordingly. The process
26 ends at 842. Again, those skilled in the art will recognize that many variations of
27 the current process are possible without departing from the present invention.

28 A directory type service can also be readily integrated into the present
29 invention as briefly described previously in connection with the example where the
30 user might simply desire a list of available vendors (e.g., plumbers). In accordance

1 with this embodiment, a suitable selection such as personal services selection 902
2 can be made from menu 310 which leads to menu 906 where the user can select
3 from a plurality of categories of services such as dentist 910. Selection 910 leads
4 to a query of the database 88 at the service provider 10 to identify dentists within
5 close geographic proximity of the subscriber. Vendors, who have subscribed to this
6 service, in much the same manner of a Yellow Pages™ type subscription or
7 advertisement, can provide submissions of advertisements to be forwarded to those
8 subscribers who make an appropriate query of the database. In this example, five
9 dentists are identified in window 912 with a first dentist identified by an
10 advertisement submission 914. The user can then navigate through the five
11 identified vendors using previous and next buttons 916 and 918 respectively. When
12 completed, the subscriber can exit using button 920 or other suitable control
13 available in the remote controller.

14 Several business models also present themselves for such an information
15 service. In one such model, a fee can be charged to vendors for submitting their
16 submissions. In another model, fees can be charged to vendors when their
17 submissions are forwarded to subscribers. In another model, a fee can be charged
18 to pay subscriber for submitting a request for information. In yet a further model,
19 a subscription fee can be charged to a subscriber to allow submission of requests
20 for information. Of course, combinations of these models can also be implemented
21 without departing from the present invention.

22 Referring now to **FIGURE 10**, the information request process of the present
23 embodiment is illustrated in the form of a message flow diagram 922. In this
24 exemplary message flow, vendor 1 and vendor 2 can submit advertisements 1 and
25 2 (924 and 926 respectively) to the service provider 10. The subscriber submits a
26 query 930 to the service provider 10 who, as a result of a database search, returns
27 advertisement 1 at 934. By scrolling at 936, the subscriber can also vide
28 advertisement 2 at 940 and so forth until the he or she chooses to exit at 944.

29 This process is further illustrated in connection with the flow chart of process
30 948 of **FIGURE 11** starting at 950. At 954, advertisers submit advertisements to the

1 service provider 10 which are cataloged and indexed appropriately in the service
2 provider 10's database 88. The subscriber can navigate a menu system to identify
3 products and services desired at 958. The subscriber then submits a query to the
4 service provider at 962 and the service provider queries database 88 for matches
5 to the appropriate vendors at 966. Matching advertisements are then forwarded to
6 the subscriber at 970. When the user selects the next of a group of advertisements
7 at 974, the next advertisement is incremented at 976 and again the service provider
8 forwards the advertisement to the subscriber at 970. In a similar manner, the user
9 can navigate to the previous advertisement at 982 and the previous advertisement
10 is retrieved at 986 for forwarding to the subscriber at 970. This continues until the
11 user chooses to exit at 992 and the process ends at 996. Of course, again, many
12 variations of the present invention are possible without deviating from the invention.

13 Thus, the present invention provides a set-top box centric method for a
14 subscriber to obtain information, quotes and register products to receive special
15 offers and advertisements while simultaneously providing a service provider with
16 another avenue for generating revenue and various vendors with an avenue for
17 reaching their target market. Since the set-top box is a convenient communication
18 device for such process and since the service provider is comparatively regional,
19 appropriate services can be readily matched up to the subscriber's needs by
20 appropriately correlating vendors with subscribers at the service provider 10.

21 Those skilled in the art will recognize that the present invention has been
22 described in terms of exemplary embodiments based upon use of a programmed
23 processor. However, the invention should not be so limited, since the present
24 invention could be implemented using hardware component equivalents such as
25 special purpose hardware and/or dedicated processors which are equivalents to
26 the invention as described and claimed. Similarly, general purpose computers,
27 microprocessor based computers, micro-controllers, optical computers, analog
28 computers, dedicated processors and/or dedicated hard wired logic may be used
29 to construct alternative equivalent embodiments of the present invention.

30 Those skilled in the art will appreciate that the program steps used to